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Basil Katcheves
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From: OWSEM Initiative Group
Aleksandr Kamenomostskiy

No. of Pages: 12 (including this cover)

These materials relate to Patent Application No. 10/513,618, currently named "Thin-Webbed Profile Member and Panel Based on It", Publication No. US 2005/0016117, filed by the inventor Alexandre Kamenomostski.

We are sending additional charts and grafts to better prove the criticality of dimension ratios of TWPMs' widths and thicknesses, claimed in application (a1 from 0.05 to 0.3 and a2 from 1 to 3).

The page 2 of this fax is a spreadsheet giving the value of Σ (Efficiency Factor) for the specific values of ratios of a1 and a2.
Page 3 is a two-dimensional chart for four values of a2 which shows the critical drop of value of Σ outside of claimed ranges.
Page 4 is a 3D-chart for all scope of data from the spreadsheet on page 2.
Pages 5 to 9 are the comparison data that display how the Alcoa's double-T profiles (I-Beams) compare to TWPMs of the same shape for loads typical to aerospace applications. Inventor's calculations show that using the relationship Σ=f(a1,a2), defined in the datasheet on page 2, a reduction of weight from 7% to 34% can be achieved.
Pages 10 to 12 are the letter that we recently sent to the office of SBDC NYS. Not having much time to edit it, we are including it as is. Please read chapters "An Introduction to the Application of OWSEM and its Benefits" and "Examples of Successful Implementations" to get better understanding of what this tecnology is about.

As we agreed on Tuesday, we will call you at 10:00 a.m. on Thursday October 18.

Look forward to speaking to you.

David Kanowitz
Oleg Fialkovsky

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Date: 10/15/2007

To: NYS Small Business Development Center
Network Administration
State University Plaza
41 State Street
Albany, NY 12246
James King, *State Director*
Mary Hoffman, *Assistant State Director*

From: OWSEM Initiative Group
Dr. Aleksandr Kamenomostskiy, Ph.D., *Inventor/Researcher*
Oleg Fialkovsky, *Marketing*
David Kanowitz, *Editor*

Dear Mr. King, Ms. Hoffman:

This is my second letter to you about my invention. The responses that I received from Ms. Collon (NYS SBDC), Mr. Sifontes (NYC SBDC) and Mr. November (SCORE) were not what I had hoped for but I am ready to take all the blame for this. Having some hearing and visual impairments and not being fluent in English (which is why I am now receiving help from my associates in writing this letter), I assume there were some ambiguities in the description of my innovation. I guess this is why it seems Mr. Sifontes believes that the innovation I am proposing is related to "designs of bridges made from stone".

In reality, my innovation is a technology which will streamline the process of designing and producing metal shapes used in many industries. Since one of the main components of the proposed technology is the analytical optimization method, it will be called **OWSEM** (pronounced "awesome") - Optimal Weight Structural Element Method.

The reason I was thinking about naming my future company "STONEBRIDGE DESIGN" is because my last name 'Kamenomostskiy' is Russian for 'coming from the Stone Bridge' and I wanted to use this name to honor the memory of my father (a Lead Designer for Sergey Korolyov - the founder and the head of the Soviet Space Program) through whose love for aviation and space I have been inspired from my early childhood.

I am a U.S. citizen and hold an M.S. Degree in Mechanical Engineering and a Ph.D. in Aviation Structural Design and Engineering. I worked in both the aircraft and civil engineering design fields in the USSR for 25 years. I was a Lead Designer in the Ilyushin Aircraft Design Bureau and a senior researcher in V. A. Kucherenko's State Central Research Institute for Building Structures (TsNIISK), Moscow, Russia.

I am certain that it will be worth your time to read these pages constituting a basic introduction to my innovation. If you or any of your associates would like further details, I will be happy to provide them either via electronic or regular mail, phone or, ideally, in person.

An Introduction to the Application of OWSEM and Its Benefits

The innovation that I am proposing, OWSEM (part of which is U.S. patent pending 10/513,618, Pub. No. US 2005/0016117, PCT/RU00/00494) relates to metal shapes of different standard configurations (profiles) that are extruded or rolled from aluminum, steel and other alloys in immense volumes all over the world by multi-billion dollar industries. They are used as the main structural elements in most load-bearing designs in the aerospace, construction, transportation, naval ship building, automotive and other fields.

OWSEM is the method of optimizing the design of these shapes' cross-sectional dimensions and, when implemented, will allow for the production of shapes at a more efficient, reduced weight while still retaining the same durability and structural integrity under the specified loads. Instead of being forced to choose shapes from the manufacturer's product catalog and settling for the closest item to what is needed, designers will now be able to specify the exact cross-sectional dimensions for the shapes' producers to more accurately utilize.

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My calculations show an average of a 20% weight reduction (from 10% to 35%) based on several randomly chosen shapes produced by the Alcoa Corp. from their own alloys for all loads typical to aerospace applications. This will translate into a savings of at least 20% of 1) raw materials (aluminum, steel and other alloys) that these shapes are made from, and/or 2) resources (including energy necessary to produce the raw material and shapes) and 3) storage and transportation costs. These savings will automatically come with a substantial reduction of negative environmental effects (i.e. destruction of soil during mining, air and water pollution, etc.)

OWSEM allows for the designing and building of spaceships, airplanes, naval ships, automobiles, etc. at the minimal weight which brings the capability of carrying additional load and/or offering superior luxury and/or providing a tremendous increase in fuel efficiency (once again, saving energy and reducing the negative effects on the environment). In aviation, one pound added to the structural weight of an aircraft requires additional wing area to lift it, additional thrust to overcome the associated incremental drag and additional fuel to travel the same distance. All these additions result in further increases in structure, creating a "vicious circle" of design cycles, ending up with the aircraft's gross weight increased from 2 to 10 times per every additional pound of empty weight that began the initial cycle. The same "vicious circle" exists in the design and exploitation of spaceships, where the value of OWSEM will be even more significant.

In construction, OWSEM both minimizes the dead load of the structure and increases reliability, allowing for the erecting of taller buildings and more efficient bridges with the ability to build them where the ground can not support the extra weight.

It does not seem like much of an exaggeration to think that my innovation, when implemented (and it is ready for implementation NOW), will bring to the U.S. and world economies BILLIONS OF DOLLARS in savings and added value annually. And this will come with NO need to 1) build new factories, 2) invest additional capital, or 3) change any infrastructure of any industry involved. All that is necessary is TO ADOPT OWSEM, which is nothing more than a more accurate method of calculating the cross-sectional dimensions of the shapes to be made. The existing production lines can be easily adjusted to roll or extrude shapes in accordance with the customers' built-to order specifications.

Examples of Successful Implementations

In the USSR, I have had successful implementations of an early version of my innovation that validate my statements:

- I was involved in designing the IL-86 airliner by Ilyushin Aviation Complex, where, as a young BS/MS graduate of State University of Aerospace Technologies (MAI), I acquired extensive knowledge and experience in every stage of aircraft design through work in different design departments (weight, air-dynamics, structural, etc). After a 3-year leave to complete my Ph.D in Aviation Structural Design and Engineering, where I first developed my *unique* universal analytical method in structural design technology, I returned to the Bureau where I wrote multiple research papers for the Bureau's General Designer including a report on "Wings' weight effectiveness of the Soviet and foreign aircraft" when I first used my method to evaluate the "weight perfection" of a multitude of designs, including the Boeing 707. Then, from the beginning of the first design cycle, I played an instrumental part in designing the currently flying Ilyushin IL-96-300, a four-engine, long-range, wide-body airliner first flown in 1988 and certificated in 1992. I was the Lead Designer responsible for adapting IL-86's tail section's design into IL-96. Despite a significant increase in air-dynamic loads, my optimization method allowed me to decrease the stringers' weight of the whole tail section by 27%. Since IL-96's introduction, not a single structural change to the tail section has been implemented for any modification of this aircraft.
- The State Central Research Institute for Building Structures (TsNIISK) was the supreme design and supervision authority for standards in construction of buildings and structures. I was invited there to help develop new standards for steel structures. Using my technology, I created standards for designing, manufacturing and utilizing steel double-T-shapes for all grades of steel and all loads applicable to the construction industry. These new standards provided a decrease of the double-T-shapes' structural weight from 10% to 35% compared to those using the old ones. The results of this work were adopted into pending standards for the USSR construction industry (Government Registration Number (GOSZAKAZ #): 08-0200-87).

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